(No Model.)

A. S. LEIGHTON, Jr.

FOLDING BED AND COUCH.

No. 564,565. Patented July 21, 1896.

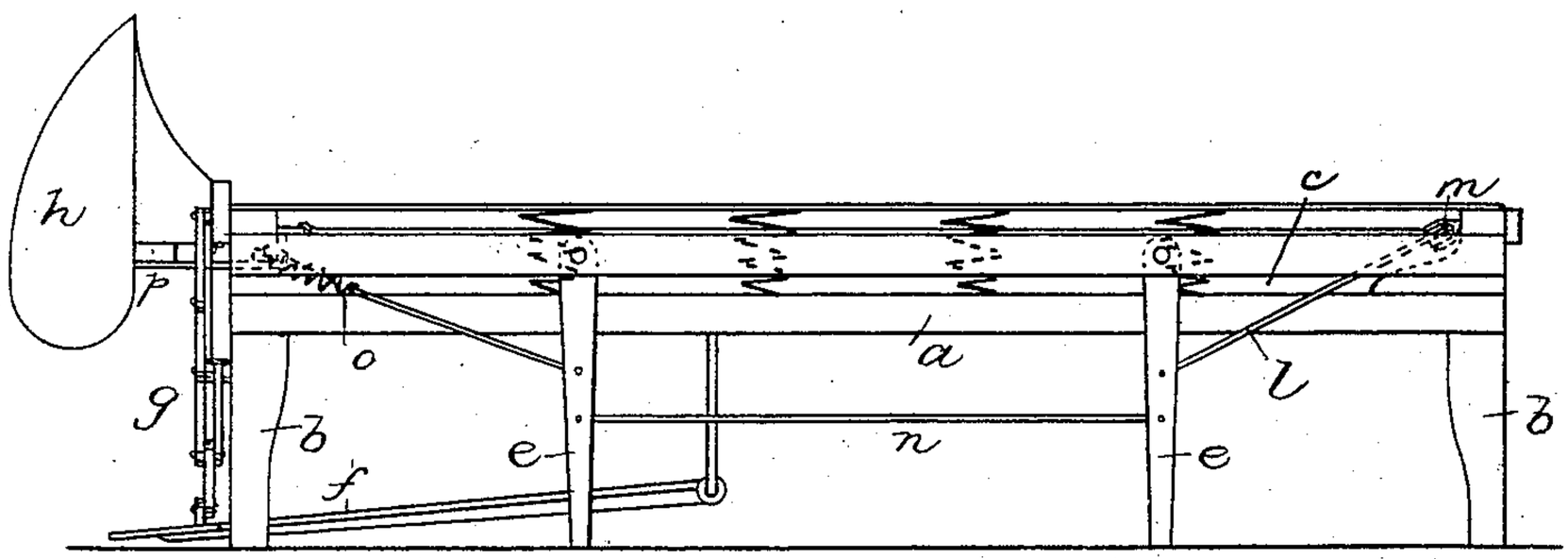

Fig. 1.

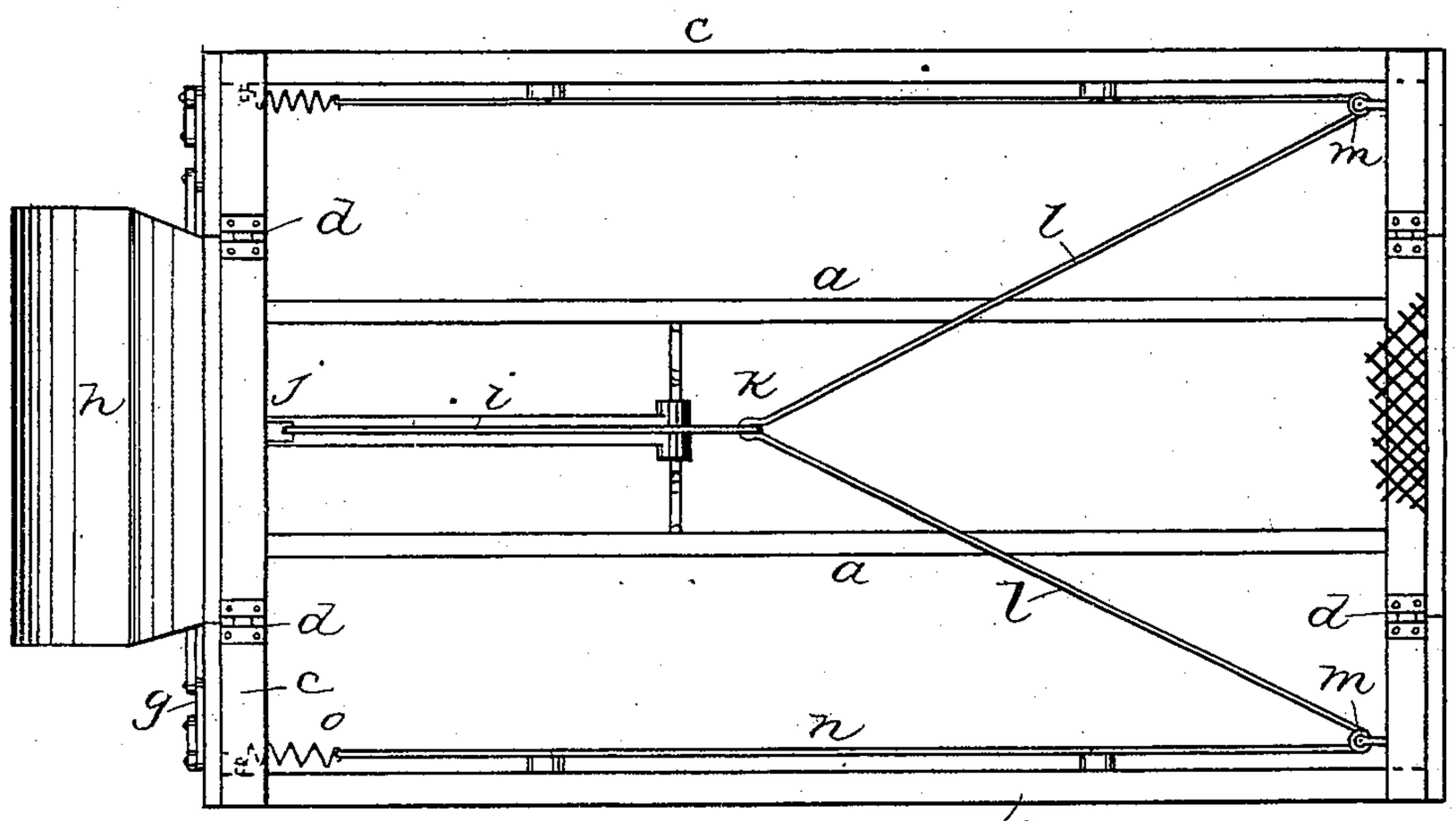

Fig. 2.

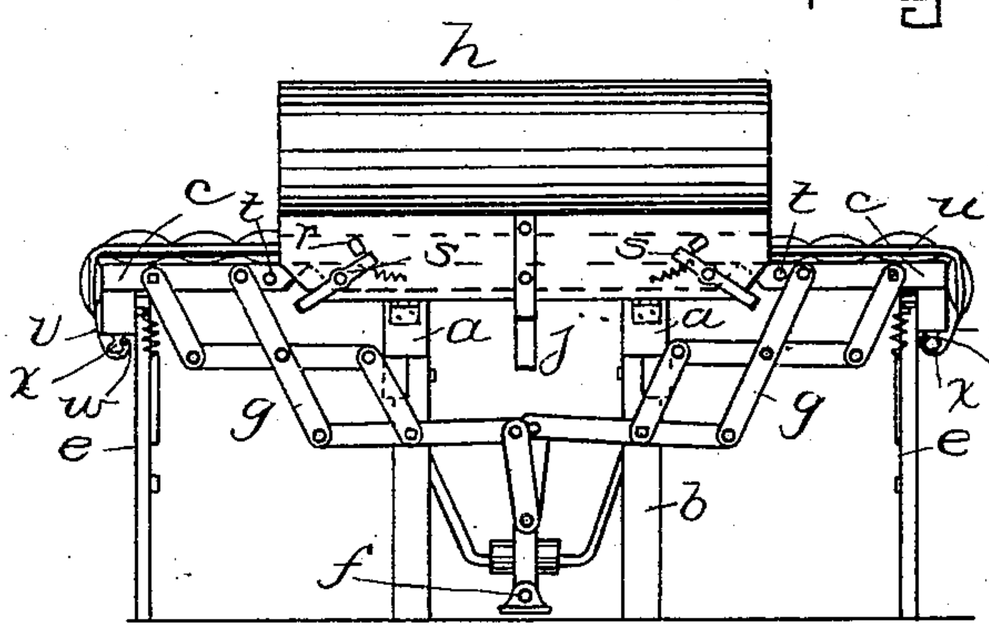

Fig. 3.

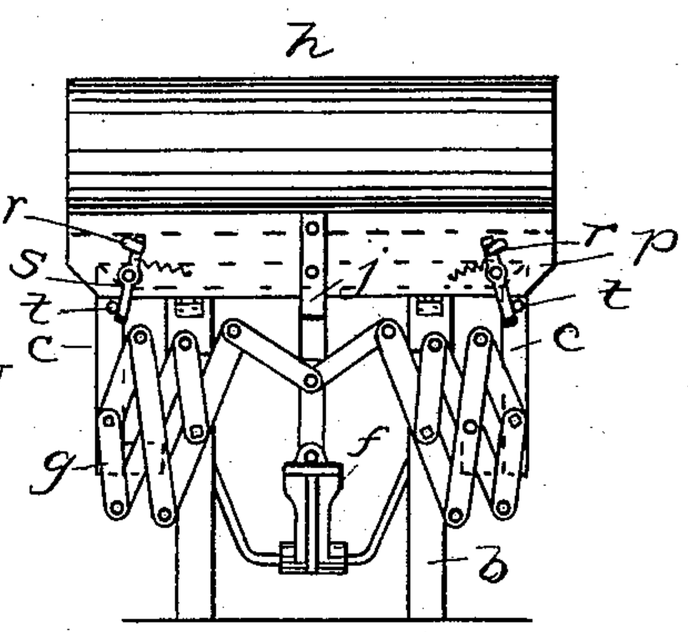

Fig. 4.

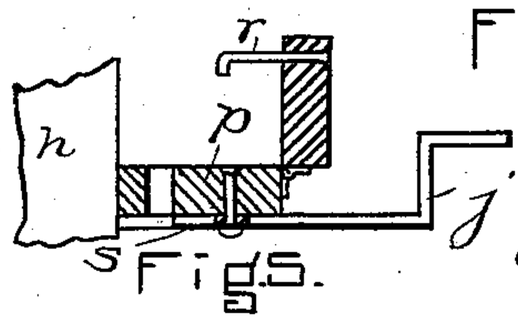

Fig. 5.

WITNESSES.

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FOLDING BED AND COUCH.

SPECIFICATION forming part of Letters Patent No. 564,565, dated July 21, 1896.

Application filed September 25, 1895. Serial No. 563,679. (No model.)

To all whom it may concern:

Be it known that I, ALGERNON S. LEIGHTON, Jr., of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Folding Beds and Couches, of which the following is a specification.

This invention has relation to convertible beds and couches—that is, to beds which are capable of being folded into the form of a couch and be converted from the latter form into a bed.

It is the object of the invention to provide such improvements in convertible beds and couches as will simplify their construction and render them more efficient and ready for use and manipulation than heretofore.

To these ends the invention consists of the improvements which I will now proceed to describe in detail, and then point out with particularity in the claims hereunto appended.

Reference is to be had to the annexed drawings, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 is a side elevation of my invention, it being shown in open position, or in the form of a bed. Fig. 2 is a plan view of what is represented in Fig. 1. Fig. 3 is an end view showing the invention in the form of a bed. Fig. 4 is an end view similar to that of Fig. 3, but showing the device folded into the form of a couch. Fig. 5 is a detail of some of the parts.

In the drawings, *a* designates the permanent or stationary and unfoldable portions of the frame of my interconvertible bed and couch, and *b* are the legs or supports therefor.

c c designate side or wing frames, which are connected with the permanent or stationary part *a* of the frame by means of hinges *d*, or their equivalent, so that the said wing-frames may be folded down to hang vertically along the sides of the legs *b*, as shown in Fig. 4, and so suit the invention to use as a couch, or be raised to horizontal position, as shown in Figs. 1, 2, and 3, and thus convert the invention into a bed.

When the wing-frames *c* are folded to horizontal position, it is necessary that they should be substantially supported in such position, and as a means to this end I provide the legs *e*, which are hinged to the under side of the wing-frames *c*, and are capable of being folded up thereunder when the said wing-frames are let down, and to be let down when the wing-frames are raised.

As a means for automatically raising and lowering the side or wing frames, I have connected the same with a treadle *f* through the medium of toggle or compound levers *g* in such manner that when the treadle is depressed the toggle or compound levers will be operated to throw the wing or hinged frames out and up to horizontal position, and so convert the device into a bed, and when the treadle is raised the toggle or compound levers will be operated to allow the wing-frames to fall and fold the invention into the form of a couch.

By employing compound levers I am enabled to obtain great power in elevating the side frames, while at the same time the levers are folded in small space when the side frames are hanging vertically. They form lazy-tongs, which connect the side frames with the legs of the main frame and have one of the levers extended, to the end of which the treadle is connected by links. In this way it is necessary to move the foot-lever but a short distance in order to extend the tongs a relatively great distance. Moreover, by this arrangement I can connect the tongs with the outer ends of the swinging frames, so as to have a long leverage.

In elevating the side frames the weight of the person is depended on to force the lever downward. In this way there can be no harmful straining of the muscles, as would be the case were it attempted to elevate the side frames by raising a lever or other device vertically.

h designates the bolster or head-piece, which is hinged to the stationary frame *a*, so that it can be folded over and onto the head of the device when it is made into the form of a couch, and be moved back and down out of the way when the invention is made into the form of a bed. I connect this head-piece or bolster, by means to be presently described, with the legs *e* in such manner that when the

bolster or head-piece *h* is raised the legs *e* will be drawn or folded up under the hinged wing-frames, and when the head-piece is lowered or folded outward the legs *e* will be left free to fall or be folded down under the wing-frames, so as to support the same in raised position, as is clearly represented in Fig. 3.

As the operative part of the treadle *f* extends forward under the head-piece *h*, it follows that the user of my improved interconvertible couch and bed by standing in a single position at the head can completely change or fold the same from a bed into a couch, and vice versa. This is an important feature of the invention.

The construction is further such that when the legs *e*, supporting the side or wing frames, are drawn up, by folding up the head-piece or bolster the side or wing-frames may drop to vertical position, as shown in Fig. 4, by gravity, so that it will not be necessary to manually raise the treadle *f*, and so that by a single movement the device may be converted from the form of a bed into the form of a couch.

I have contrived different forms of means for connecting the legs *e* with the foldable head-piece or bolster *h*, so that they may operate or be operated in unison. The said means herein shown, which have been found, among others, suitable for the purpose, may be described as follows:

i designates a cord, or it may be a rod, attached at one end to a projection *j* on the head-piece or bolster *h*, and connected at the other end, as at *k*, to branching cords or ropes *l*, which extend rearward around pulleys *m* and connect with the rear legs *e*, the rear and front legs *e* being connected by a cord or rod *n*. Connected with the front legs *e* and the frame are springs *o*, which operate with a tendency to draw the legs *e* down to vertical position. Under this construction and arrangement, should the device be opened out in the form of a bed and it should be desired to fold it into the form of a couch, by taking hold of the bolster or head-piece *h* when the same is in lowered position and raising it the cords *i* and *l* will be drawn upon, drawing the legs *e* up from vertical to folded position under the wing-frames, allowing the latter to fall by gravity from the position in which they are shown in Fig. 3 to that in which they are represented in Fig. 4, and when it is desired to open the devices from couch to bed form the operator upon taking hold of the head-piece and drawing or folding it outward and downward will relax the cords *i* and *l* and allow the springs *o* to draw the legs *e* down to vertical position after the wing-frames shall have been raised by the depression of the treadle *f* operating through the medium of the toggle-levers *g*, as before explained. In addition to these features, I provide means for automatically locking the bolster or head-piece *h* in its position upon the frame when the invention is in the form of a couch, and thereby locking the legs of the side wings in their raised positions. The bolster or head-piece is mounted upon a hinged cross-piece *p*, which has apertures through which hooks *r* are adapted to project when the bolster is thrown forward. *s s* are pivoted spring-held latches mounted upon the end piece *p* and having ends which are adapted to be impinged upon by projections *t* on the side wings, so as to throw the latches into engagement with the hooks and lock the bolster in its forward position.

When the side wings are raised by means of the treadle and the toggle-levers, the projections *t* are disengaged from the latches, and the latches are drawn by their springs away from the hooks, so that the bolster is thus free to be swung backward. This feature of my invention is also important, as the springs *o* tend to draw the legs down and thereby raise the head through the medium of the ropes *i*, unless some means be provided to lock the head in its forward position. I do not mean to limit myself to this particular locking means, as others may be provided for accomplishing the same purpose without departing from the spirit and scope of the invention.

The couch may be covered with drapery, (not shown,) so as to present a neat and finished appearance and so as to hide the mechanical parts from view, and I also provide means whereby the mattress *u* may be held without danger of being displaced when the invention is changed from one form to the other. Along the outer edges of the mattress I sew, or otherwise secure, flaps or strips of canvas, ticking, or similar material *v*, and fasten rods *w* along the outer edges of the same. The side pieces of the wing-frames are provided with buttons or pins *x*, behind which the rods may be sprung, thereby holding the mattress securely in place, as will be readily understood.

By the foregoing description it will be seen that I have provided an interconvertible bed and couch of a neat and tasty appearance, and which can be changed from one form to the other by a person standing at the head thereof with the aid of simple mechanical contrivances which may be operated with the greatest ease and rapidity.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

1. An interconvertible bed and couch, comprising a main frame, two swinging side frames, power devices for elevating said side frames to horizontal position, and depressible means for operating said power devices to elevate said side frames, the construction and arrangement being such that when said means are depressed, the side frames are elevated, and vice versa.

2. An interconvertible bed and couch, comprising a main frame, two swinging side frames, a pivoted treadle, and power devices actuated by the pivoted treadle for raising said side frames to a horizontal position, substantially as set forth.

3. An interconvertible bed and couch, comprising in its construction, a main frame, two side frames hinged to the main frame, and depending therefrom, toggle-levers for elevating said side frames and a lever fulcrumed under the main frame, and connected with said toggle-levers.

4. An interconvertible bed and couch comprising in its construction a main frame, side frames hinged thereto, means for elevating said side frames, a bolster or head and means connected with and operated by said bolster or head-piece for supporting said side frames independently of the elevating means.

5. An interconvertible bed and couch, comprising in its construction a main frame, side frames, and means adapted to be operated from the head of the bed for elevating the side frames and means operated from the head of the bed for supporting them independently of the elevating means after they are elevated, substantially as set forth.

6. An interconvertible bed and couch comprising a main frame, two swinging side frames, a lever arranged under the bed and having one end near one end of the main frame, a pivot for the inner end of said lever secured to the main frame, and lazy-tongs for elevating said side frames and connected with said lever at its free end.

7. An interconvertible bed and couch, comprising in its construction, a main frame, side frames, supports therefor and pivoted thereto, a bolster or head-piece operatively connected with said supports, and a lock for said head-piece adapted to be operated by the side frames, substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 4th day of September, A. D. 1895.

ALGERNON S. LEIGHTON, JR.

Witnesses:
E. R. LEIGHTON,
M. B. MAY.